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The best laid plans: Impacts of politics on local climate change adaptation

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ABSTRACT

Academics and champions seeking to guide and implement proactive climate change adaptation must be aware of how local political factors can be a barrier or a benefit to action. With a wave of support, the City of Prince George, Canada, pursued adaptation initiatives for six years; however, part way through the project, political changes resulted in a local governmental shift in focus. Semi-structured interviews with local experts reflect on how political changes affected the nature and legacy of adaptation in Prince George. Respondents indicated that the new political regime was not anti-environmental but explicitly focused on reducing costs, which meant minimizing studies and providing essential services. Initiatives related to transportation infrastructure and land use planning continued to move forward, whereas issues related to flooding and ecosystems were stalled. Plans and strategies that make clear links to costs and actions, and where the public clearly understands how inactions will affect them, are more likely to move forward in a less supportive political environment. Redundancies in capacity are important to maintain institutional memory. Effective communication is essential for stakeholders to understand why local governments should invest in adaptation, and to potentially present adaptation as a positive unifying direction for a community.

1. Introduction

Although there was a time when society could have drastically minimized the need for climate change adaptation through appropriate mitigation, atmospheric greenhouse gas (GHG) emissions have now increased to levels where undesirable impacts of climate change are already being experienced. Additionally, due to GHGs already in the atmosphere, further change is inevitable for generations regardless of mitigative actions (IPCC, 2013). As a result of these realities, adaptation has emerged as a legitimate and necessary response to climate change, and actions are required by all levels of government (e.g., Lesnikowski et al., 2016).

Local governments are well-suited to engage in proactive adaptation, and most successful adaptation initiatives to date focus on (and are often led by) cities, towns or regions (e.g., Hunt and Watkiss, 2011; UNFCCC, 2018). The success of local adaptation is due to many factors, including the ability of smaller groups of people (i.e., communities) to apply local knowledge in order act quickly and autonomously toward changes that can provide direct benefits to those who undertake them, unlike mitigation where benefits are often dispersed (Füssel, 2007). Other factors that encourage adaptation at local levels include the fact that climate impacts (such as floods and landslides) have localized impacts on infrastructure assets, and clear linkages with spatial planning (Storbjörk and Hjerpe, 2014; Measham et al., 2011).

The purpose of this article is to specifically reflect on the influences of political changes on the adaptation project in Prince George. These lessons are relevant to a broad audience, as politics is an inevitable and important factor in adaptation that had a significant effect on the Prince George case study. Like it or not, researchers and practitioners engaging in adaptation must acknowledge, understand, interphase with and respond to political processes. Existing literature reviews the local strategies (e.g., Picketts et al., 2013) and implemented actions (e.g., Picketts et al., 2014; Picketts, 2015).

A plethora of studies exist that outline barriers to implementing adaptation actions at the local level in developed regions, and political factors are commonly identified as both an enabler and a barrier. With some exceptions there are few studies that focus on the political aspects of adaptation. In a systematic review of 81 papers Biesbroek et al. (2013) found that one of three main adaptation-specific barriers relates to tension between the long-term nature of impacts and short-term political agendas. They also found that local governments are constrained by a lack of policy guidance, resources and support from other levels of government. These barriers are echoed by Measham et al. (2011) who found that adaptation must compete with other needs that are often seen as more pressing by local councils, and that it is also considered as solely an environmental issue. Other persistent barriers that local governments must overcome to implement adaptation including a lack of resources, capacity issues and increasing responsibilities as higher levels download more responsibilities (Eisenack et al., 2014; Baker et al., 2012). Furthermore, these barriers cannot be viewed

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in isolation: they interact and can make action increasingly difficult (Eisenack et al., 2014).

Hjerpe et al. (2014) find that, as adaptation is rarely a required local governmental action and few incentives exist, local political will is highly important for adaptation to be successful. They conclude that adaptation often remains low on political agendas in developed nations, and that mitigation remains a more attractive response for local governments. Eriksen et al. (2015) go further than identifying politics as a barrier or enabler to adaptation, and argue that all adaptation measures affect people differently, and are thus political in nature. Therefore, although adaptation can be driven internally by local staff and can also be acknowledged broadly as a priority, without support from political leaders it may not receive resources and thus not carry forward.

The purpose of this article is to help better understand how local political changes can affect adaptation actions, and inform how decision-makers can create adaptation plans and actions that are themselves resilient to inevitable changes in politics. This is accomplished by examining and reflecting on the unique circumstances that occurred in Prince George, Canada. The context of the case study community is explained in the following section. The outcomes are communicated in the results, and these are analyzed and summarized in the discussion and conclusion sections.

1.1. Context: city of Prince George

Prince George is a City of 76,000 located approximately at the geographical centre of the Province of British Columbia (BC), Canada. The City is typically regarded as a conservative centre in otherwise more-liberal BC. Since 1972 Prince George has elected conservative Members of Parliament federally, and since 2001 liberal (the rightmost major party) Members of the Legislative Assembly provincially. Prince George is strongly linked to resource development with a heavy economic reliance on forestry. The community has chronic air quality concerns related to forest industry activities taking place near to the city centre, road dust and transportation emissions (PGAIR 2017). Curbside recycling only began in 2015, and the City has a sprawling urban form including over 600 km of roads.

The Province of BC has been a leader in climate action. The Province joined the Western Climate Initiative in 2008 as part a collaborative effort to reduce greenhouse gas emissions in North America (WCI, 2018), implemented North America's first legislated (and progressively increasing) carbon tax in 2008 (Pedersen and Elgie, 2015), and created an adaptation strategy in 2010 (BCMOE, 2010). The adaptation strategy lays out many deliverables, including plans for research institutions (i.e. the Pacific Institute for Climate Solutions and the Pacific Climate Impacts Consortium) to provide scientific guidance and plans to integrate adaptation into Provincial policies. The strategy and supporting institutions provided direct support and rationale for pursuing adaptation in Prince George. Mechanisms to guide local-scale adaptation in BC include municipal land use policy plans (called Official Community Plans [OCPs]) and general overarching sustainability plans (called Integrated Community Sustainability Plans [ICSPs]). The scope and jurisdiction of an OCP is guided by the BC Local Government Act (BCLGA) (BC Government, 2018). Currently the BCLGA requires communities to provide GHG emissions reduction strategies, but not adaptation targets.

In BC, local governments (i.e., municipalities and regional districts) are primarily responsible for the planning, construction and management of land and infrastructure systems and services within their jurisdictions. Local governments in Canada have their powers delegated to them from Provincial Governments. Federal governments have limited interactions with municipalities, but often provide funding for major projects. Over 75% of funding for Canadian local governments is internal, with the majority of revenue generated from property and related taxes. The largest local expenditures relate to transportation, protection (e.g., fire and policing), and environment (e.g., water, sewage and garbage) (Statistics Canada, 2009).

Local concerns about climate change emerged largely in response to the mountain pine beetle (MPB) epidemic in the early 2000 s. The MPB - a native insect that typically attacks pine stands in boreal forests - has exploded in population and range in Northwestern North America since the 1990 s. This insect, unimpeded by the cold winter temperatures that historically limit populations, has killed over half of the merchantable pine volume in British Columbia (Pedersen and Elgie, 2015). The MPB has significantly impacted the forestry industry, increased fire risks and had a major effect on City parks and forests. Prince George also experienced other events, that may be partially attributed to climate change, which have had social, environmental and economic impacts. These include major river flooding events in 2007 and 2008, and premature infrastructure deterioration related partially to warming winter temperatures causing increased winter freeze-thaw events (Picketts et al., 2013).

Prince George was fortunate to ride a wave of support for adaptation with in-kind and financial assistance provided by Provincial, Federal and local governments, climate modelling centres, environmental Non-Governmental Organizations and professional associations. In late 2009 a climate change adaptation strategy was unanimously approved by mayor and council, and $250,000 of funding (with federal grant money matching municipal funds) was secured for a second phase of research focused on implementation. This second phase focused on eight initiatives related to incorporating adaptation into local plans, continuing study related to local priorities, and amassing additional information to help inform and support adaptation decisions. These eight initiatives are outlined in Table 1, and fully summarized and evaluated in Picketts (2015). With regards to mitigation, the City of

Table 1
Overview of adaptation initiatives in Prince George.

Project	Outcomes and assessment
Incorporating adaptation into the sustainability plan (ICSP)	Adaptation is a focus of the document and highlighted in the scenarios. Not viewed as successful as Plan is not binding.
Incorporating adaptation into the community plan (OCP)	Explicit references to adaptation throughout document. Viewed as successful as actions incorporated into binding policy.
Incorporating climate projections into flood risk analysis	Additional freeboard allowance of 0.6 m recommended for flood construction levels. Viewed as successful incorporation of measures into existing strategy.
Exploring how climate change affects transportation infrastructure	Projects initiated related to: winter road maintenance and safety; and road design. Viewed as highly successful due to pragmatism and cost implications.
Analyzing climate impacts on natural ecosystems	Mapping conducted identifying areas vulnerable to changes in to soil moisture. Moderate success: important information gathered.
Analyzing changes in rainfall intensity and freeze-thaw cycles	Analyses conducted that confirmed freeze-thaw cycles are increasing in winter. Moderate success: important information gathered.
Summarizing forestry adaptation initiatives	Ongoing initiatives highlighted related to wildfire management and local parks. Limited success as City had already taking action on issue.
Summarizing other adaptation priorities (i.e., emergency response, slope stability, agriculture)	Future plans for actions outlined. Moderate success: important information gathered, but implementation unlikely.

Prince George approved carbon neutral plans and greenhouse gas reduction policies in 2010, in compliance with the BCLGA (CPG 2018).

During the adaptation project, some key changes and events occurred in Prince George. In 2012 a new Mayor and three (of eight) new City Councillors took office in Prince George. The Mayor's campaign centred on providing basic services (such as infrastructure repair and maintenance) while reducing public spending by 10% (CBC, 2011). Days after taking office, the Mayor and three councillors initiated a core services review to evaluate potential changes to City revenues and spending, and to explore how resources could be directed toward spending on infrastructure (KPMG 2012). Before the start of the core services review, 28 City staff positions were eliminated. Jobs eliminated included positions in Environmental Services, Long Range Planning, Communications, Development, and Transportation Planning. These changes directly impacted nearly all of the City Staff members involved in the adaptation project in different capacities, including planners, engineers and managers.

In 2012, based on the flood risk analysis project, Prince George Council approved a proposal to accept a grant to construct a dike along the south bank of the Nechako River. It was estimated that the construction costs of the project would total $9.0MCAD, and that $5.4 M of this was secured through equal portions of federal and Provincial grand funding and $3.6 M would be borne by the City through a loan (Dyer, 2012). Local citizens protested the project, asserting that flood management was a provincial concern, the dike would lead to an unacceptable increase in municipal taxes, and existing flood mitigation measures were sufficient to minimize local flooding. A petition of over 9000 signatories pledging opposition to the loan was submitted to City Hall, which – as it represented more than 10% of the population – was sufficient to show that electoral approval was not obtained. Mayor and Council ultimately did not approve the loan authorization (Babicz, 2012), and the project has not gone forward. The opposition to the dike reflects a strong sentiment, by a vocal proportion of the local population, that the City should be reducing costs and minimizing actions outside of core services.

2. Methods

The Prince George case study is uniquely well-suited for this research topic. This is due to the City's extensive experience in adaptation research and action, and the occurrence of a political shift in the midst of local adaptation planning and implementation. Semi-structured interviews with 17 local experts were conducted to reflect on the case study experience. This article focuses explicitly on the emerging and overarching themes related to politics from transcriptions of the interviews. Interviews were an average of 75 min in duration, and interviewees had an average of 15 years of professional experience working in Prince George. Early answers elucidate an exceptionally high level of knowledge and awareness of climate change adaptation, as evidenced by all respondents accurately defining adaptation and acknowledging its impacts on the social, economic and environmental viability of their community (Picketts, 2015).

Interviews consisted of nine open-ended questions, including several asking respondents to reflect on the entire project, the individual initiatives, and how (or if) it this work might move forward. Every respondent spoke in detail about political changes and their effects on the project, and over 50% of total interview time was focused toward this subject. Although the effects of political changes on adaptation was not the initial intended research purpose many informed, valuable and unique insights were garnered that are relevant to researchers, practitioners, policy-makers and politicians seeking to advance adaptation.

Interviewees consisted of current and former City staff, politicians and professionals engaged with the City on adaptation work (such as consultants and organizational leaders). For analysis, the respondents are subdivided into three subgroups:

1 decision makers (6 respondents): elected officials (current or former) or people directing and overseeing actions in the city
2 practitioners (6 respondents): persons working in a professional capacity as an engineer, planner or environmental scientist
3 champions (5 respondents): persons who advocated for adaptation in the City without being in one of the two previous categories

Additional information about participants is not provided to protect anonymity related to this sensitive topic. Due to the sensitivity of the topic I also waited two years before submitting these results for publication.

3. Results

Early questions in the interviews reinforced that the level of knowledge of the respondents about climate change adaptation was exceptionally high (see Picketts, 2015). As noted, over 50% of interview time was dedicated to discussion about how political changes affected the Prince George adaptation initiative. As there were no explicit questions related to this topic, opinions came in a variety of contexts and forms. The responses are organized to answer three broad questions. The questions, the major themes in response, and the noteworthy exceptions, follow:

3.1. Question 1: what motivated the political change in Prince George?

Respondents overwhelmingly agreed that the new mayor and council was not explicitly opposed to climate change action. There was no evidence in the campaign of non-environmental or anti-climate sentiments. The consensus was that the local focus took a stark shift away from long term projects toward meeting what is perceived as immediate needs. Three interviewees commented on the framing and rhetoric of the local core review, noting that it is a way of positioning and analyzing what the City must do. The core review was seen as a mechanism to push away non-necessary initiatives and focus resource toward economic and service-oriented activities. This sentiment was articulated by one decision maker:

> "A mantra that we are going to see for the rest of my life is 'difficult economic times'. This is a statement we will hear a lot over the next few years and it basically means that we won't get support for 'extras'. It is a simple way to say that I am not going to prioritize what you think it is important. It is not necessarily to say we actually are in difficult times."

A related topic that practitioners and politicians spent considerable time discussing was the infrastructure deficit in Prince George, and in Canada. This reality relates to the large amount of construction in Prince George completed in 1960 s and 1970 s, that is coming to the end of its useful life. Respondents articulated how local staff and council is becoming increasingly aware of this problem and how the City will have to fundamentally change how it does business in order to pay for infrastructure renewal. One practitioner noted that anything beyond roads, water, sewer, building and fire simply will not get priority for at least two decades in Prince George, and likely in most other Canadian municipalities.

Other significant themes related to public mistrust of local governments, and their perception as local governments as simply a service provider. More that half of the respondents made comments related to one or both of these interlinked ideas. A prominent champion lamented that a significant portion of the public believes that a large proportion of the money government spends on studies disappears into corruption and that the results of studies are rarely acted upon. Thus, the public believes that the City should focus on 'snow removal, potholes and sewers'. A practitioner related an example where a plan was proposed for wildfire risk production that involved using the value of timber harvested to fund the deforestation of areas that pose risks to the City.

The City proposed a flexible funding model, due to the fact that some areas had high timber value and some had low value. Ultimately stakeholders did not trust the City to fund the model and the plan was not supported.

One manager summed up the challenge with the reduced focus on adaptation as a result of changing priorities:

> What gets priority: the things impacting us today. Schools, crime, roads, garbage. that is what people are focused in on. It is very difficult to get people to really pay attention to something that is somewhat or very nebulous to them, that is off in the future potentially, and that is an uncertainty in their mind. You and I know that there's a certainty to what's coming, we know that it is happening already and we are already experiencing the effects, but I don't think that most people know that.

Overall, respondents believed that support for the expenditure of public funds toward climate change action had become lower, as there had been no climate-related events that occurred in the previous 18 months. Dramatic changes and events are important for motivating adaptation responses (Berrang-Ford et al., 2011, p. 32), and several interviewees commented on how interest in Prince George was high in the months following flooding events and when the mountain pine beetle epidemic was at its peak. Respondents believed support will increase in the future, but that it may take a major event to galvanize this support.

3.2. Question 2: how did the change in political mindset in Prince George impact the adaptation initiative?

In the interviews respondents were asked to assess which adaptation actions have been successes and failures (see Picketts, 2015 and Table 1), and 13 Respondents related that the change in political mindset to short term issues directly and seriously affected specific initiatives.

There were the greatest number of related comments (11) on transportation infrastructure, which was seen to be the initiative most likely to continue regardless of political changes due to its linkages to services, costs and cost savings. One decision maker related the success of transportation to its immediacy, and the fact that the public has made explicit connections between climate change, freeze-thaw cycles and road quality. This view was contradicted by three interviewees. A practitioner pointed out that, although there is interest and desire, the recent cuts greatly reduced the City's ability to take proactive action to remedy problems. This person noted that to change standards the subdivision bylaw must be updated; however, after the staffing cuts the people who would have the ability to create a strong bylaw that incorporates climate information were no longer in positions to do so. One manager lamented that the cuts pushed any significant bylaw improvements back for at least five years. Another manager noted that this work might get contracted out, but that there would be an inferior product and no legacy of information retention and documentation.

The OCP was viewed by several as a positive measure that cemented adaptation into a policy document. Seven people noted that the OCP could withstand a political change due to its 'teeth', but four of these people also noted that and OCP ultimately must be implemented and enforced by a supportive mayor and council. Conversely, respondents were unanimous in their assertions that the ICSP would not lead to continued adaptation (despite the strong directions outlined within it) because it was not a policy document, and it had been created before the current administration was in power. Thus, respondents did not feel that the new regime would take ownership over the strategic directions outlined.

'Flooding' was perceived as a successful initiative to undertake as it pragmatically incorporated climate considerations into an existing strategy; however, over half of the respondents referenced the backlash to local flood control measures (overviewed in the *City of Prince George* Section) and the ultimate rejection of the dike project at least once during their interview. These references were linked back to current public attitudes of opposition to taxes and spending, and to minimizing the role of local government. Therefore 'Flooding' is a notable initiative, as it was viewed as a successful course of action initially, but one that would not continue in the face of political change. Several managers and practitioners continued to explain how the public did not embrace the information regarding flooding, and therefore did not make the connection between flood control mechanisms and reduced risk. Three people expressed particular dismay that the public did not know or did not understand that much of the funding for flood protection would have come from higher levels of government and thus would not have affected the City's budget.

Natural areas was highlighted by five respondents as an initiative that was unlikely to proceed further. Three people noted that this type of work would simply be viewed as a 'study', and that the public would resist proposals for action based on the work. Two of these respondents quickly followed up by noting that proposals for action based on this work were unlikely anyways, given the staffing changes. One manager related the unfortunate reality that the City is likely to ignore impacts to natural ecosystems or flooding until something happens, at which point they will seek emergency funding to mitigate the risk or respond to the problem:

> After something happens you will get funding to look at [natural areas]. Something like transportation you won't get disaster funding for. It isn't sexy. We would have never gotten flooding funding without the big flood.

3.3. Question 3: how can organizations design adaptation measures that can withstand changes?

Interviewees had many suggestions for improvements communities could take to enhance the chances of implementing adaptation action. The main themes centred on two ideas:

1) going beyond planning and translating results into courses of action
2) communicating effectively, gathering support and building momentum

For the first theme, five respondents made specific comments about how a plan is not a result but the beginning of comprehending an issue. A plan is a good place to start, but adaptation then needs to be built into processes and eventually become part of day to day work and risk management. One manager noted this by stating:

> "It is about building processes, bringing people to the table, managing risks. All that process needs to be documented, but we are lousy at documenting processes: we just don't do it!"

Respondents continued to articulate that adaptation is about improving our decision making. A practitioner noted how engineering is largely about learning how to make better decisions, particularly in the midst of change. Two champions noted that a key missing element of the adaptation initiative is that it did not go so far as to assign responsibilities and accountabilities. (Although both respondents also noted that the City did not have the resources to allocate these, and even if they had the CORE review would have probably removed these roles). This reinforces the challenge that without documentation and institutional memory, it is hard to get to an implementation stage. One manager summarized the need to get to the next phase:

> "[We need] Specific procedures, not things that sit on the shelves. Take broad policy objectives and bring it down to specific terms. Put it into bylaws, procedures, financial reporting. This is where I would focus. The OCP was critical but we needed to go to the next stage.… from though should toward though shalt

Communication was a major theme in the interviews. Communication was deemed necessary to build awareness within City administration to understand what is needed locally, and then to validate priorities and gather support within the community. 10 respondents explicitly linked the need to communicate the broader links between adaptation, costs, taxes and/or assets. Interviewees identified the need to clearly articulate the relationship between proactive action, good design and long term costs. One practitioner stated

> Its a matter of explaining really clearly what's happening, why we have to adapt, what's going to happen or transpire if we don't do anything, then what its going to cost. Adaptation also doesn't depend on what other communities do. It doesn't matter what china does. If we have fire or infrastructure risk, then OK we can do something about it.

Respondents emphasized the need for both negative and positive communication. The public needs to be aware of costs and respond negatively when issues like flooding are not addressed and the public remains vulnerable to extreme events. Conversely, relating weather to climate to community was identified as a positive way to expand dialogue and to create a vision that creates positive change in the City. One champion identified the need to propagandize a new vision that identifies positive opportunities. This person stated that "we don't have to talk about '*adapt or die*', we should talk about '*adapt and thrive*'".

Several interviewees linked gathering support to communication and documentation within the City administration. The City depends on professionals to aid in processes, and individuals improve these processes but do not necessarily document how or why the process is different. Three respondents identified professional organizations as an ideal place to build support, capacity and momentum within groups of planners, engineers and other professions. One champion articulated:

> Political will changes regularly but good solid professional practices are consistent. If we can get the professional organizations and the people in them understanding how climate change affects what they're legally bound to do then it becomes good practice and it can removes some components from political side.

4. Discussion

Political support is an important factor in local-level adaptation, but it has been relatively unexamined in the literature. The Prince George case study provided a unique opportunity to explore how political changes affect the success of adaptation efforts, as there was a rapid transition from a supportive to a non-supportive political situation in the middle of a comprehensive adaptation initiative. Biesbroek et al. (2013), Measham et al. (2011) and others note political tensions as a barrier to implementing adaptation, as well as a lack of resources and support from other levels of government. The resource and support barriers were largely alleviated in the Prince George case study due to available in-kind and monetary resources and the BC's leadership in enabling local climate action; however, Baynham and Stevens (2014) also note that there are few explicit community planning goals and actions for adaptation specifically in BC.

In the first theme I have explored what motivated the political changes. Removing climate adaptation (and also mitigation) decisions from the effects of short term political changes is a major ongoing challenge (Measham et al., 2011; Burch, 2009). The underlying motivations for the shift away from adaptation in Prince George related primarily to cost, and to minimizing the role of local government to providing basic services. They also reflect a mistrust of government. The irony of limiting planning to save costs was a recurring theme in the interviews. One practitioner noted:

> Actually infrastructure planning – not putting your focus on operations and management – actually planning infrastructure will save you money substantially. If you are simply responding to emergencies that is the most costly and inefficient way of offering a service.

Four respondents claimed to be intimately familiar with local finances, and all asserted that Prince George is in a better-than-average situation as a municipality, in terms of assets and debts. One participant referenced Canadian laws that tightly limit how much debt a local government can take on (see Statistics Canada, 2009).

A lack of consistent support for adaptation activities is a major challenge in Prince George, and in communities around the world (Burch, 2010; Storbjörk, 2010; Measham et al., 2011). The erosion of support was widely linked to a lack of climate-related events in the months leading up to the election. Storbjörk (2010, p. 245) discusses the '*event-driven nature of legitimacy*', and notes how communities in Sweden have been taken by surprise repeatedly by not reducing risks between events, and instead diverting money away to different priorities that were deemed to be more urgent. Unfortunately, Prince George appears to be currently following this trajectory by eliminating positions in long term planning and not improving its flood protection infrastructure. The idea that Prince George may need another event to galvanise support is grim, as the City has already witnessed a large number of climate-related impacts firsthand, in additional to other recent events in Western Canada (including disasters Fort MacMurray and Calgary). One planner expanded on this sentiment while expressing disappointment on the status of the dike project:

> "Memories are very short – hence the public backlash against the dike. The City applied for that project just over a year after the last flood. It took over two years for the province/feds to make a decision. Unfortunately enough time had passed that people had forgotten that there was a flood that cost $4 million to recover from, not including the loss of business and everything."

The adaptation priorities that were most highly supported and likely to proceed (theme two) were those that the public and politicians linked explicitly to cost savings (e.g., transportation infrastructure). Conversely, the interviewees believed that others were not supported (e.g., flood mitigation and natural areas mapping) for two main reasons: 1) clear links to costs, of both action and inaction, were not made; and/or 2) the project was seen as a study, and no tangible actions were made or outlined.

Therefore, it highly important for those advocating for adaptation to articulate how a climate impact will affect a community's costs through the ability to offer services. One politician related the flooding example, noting that the link between flood protection and costs was not explicitly articulated. Flood damage resulted in more insurance claims than fire damage in Canada recently; however, the City of Prince George spends 35% of its budget on municipal fire protection and response and does not have a single staff member dedicated to flooding. Conversely, the link between climate and road quality was more apparent to stakeholders. Ideas to clarify the actual costs that practitioners posited related to tallying flood damages, tracking injuries from winter road incidents and monetizing losses from forest fires. It is also important to outline implementation actions, and to not end an initiative with simply a plan or strategy as an output.

A key negative outcome of the political changes was that it precipitated a personnel shift, which affected capacity and institutional memory. Several interviewees expressed concerns that further knowledge and capacity will be lost as people retire and change positions, if new staff are not educated about adaptation. This knowledge will be significant as adaptation continues in Prince George, as `*learning-oriented reflexive processes are an important condition for climate change considerations to be made part of the structure, practices and behaviour of actors and organizations and administrative units from different sectors and levels*` (Storbjörk, 2010, p. 239). Therefore, people need to prepare for changes in personnel by collaborating within their organization,

communicating their results and clearly documenting plans and actions.

The solutions to the challenges in themes one and two were outlined in theme three. A key outcome of this final theme is that, to be successful in implementing adaptation, organizations need to communicate effectively and translate results into actions. One concept outlined by four participants was that adaptation could be marketed as a unifying issue that can bring together social, environmental and economic concerns. One decision maker believed that this was the way to rise above competing interests and gain political attention and funding. One champion combined the need for tangible actions and building support with this statement:

> "When a government needs to expend significant amounts of money it usually only happens in a crisis – like a war. If you treated it [adaptation] like a national goal - Like a railway - then people will mobilize around it… Right now, because of the way government doesn't have or state national objectives, nobody can rally around it. You can't rally around a plan."

One practitioner suggested that adaptation be communicated as a way for Prince George to maintain its identity in the face of transition. A decision maker echoed this, noting that if the community articulated a vision which includes (or requires) proactive adaptation then politicians would have to be responsive to this division. These ideas echo the ideals of transformative adaptation (e.g., Eriksen et al., 2015) and just sustainability (e.g., Agyeman et al., 2003) where groups transition toward being more just and sustainable alongside pursuing goals that are traditionally viewed as environmental in nature.

5. Conclusions

Prince George has provided an adaptation case study ripe with opportunities and challenges. The City was able to leverage its considerable internal knowledge and capacity with significant external funding and support to emerge as a leader in local level adaptation; however, the funding has concluded, and changes within the City (most notably a new Mayor and Council and resultant elimination of staff positions) had significant effects on the overall adaptation initiative and bring the future of proactive adaptation in Prince George into question. Although these changes are widely regarded as negative as they relate to adaptation, the circumstances provided a unique research opportunity to examine this relatively unstudied aspect of adaptation (Biesbroek et al., 2013).

This study reveals strong emerging themes and lessons for communities seeking to understand political barriers to proactive adaptation, and begins to address the clear need to identify strategies for overcoming them (Eisenack et al., 2014). The most significant outcomes are as follows:

- Politicians motivated to minimize costs, and/or the role of local government in general, may not prioritize adaptation: it must be made clear to all stakeholders that proactive adaptation saves money and helps a municipality to provide basic services. Plans and actions that have clear links to cost savings are more likely to be supported.
- Studying climate change adaptation is not enough: plans must translate directly into actions and be followed up by tangible initiatives if they are to gain traction.
- Support for adaptation can be high following extreme events, but this support can quickly erode.
- Adaptation can be communicated as a unifying issue and an opportunity to promote better designs and decisions in the midst of change. Successful adaptation can achieve social, environmental and economic goals. To achieve these goals, institutional memory and documentation is imperative.

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